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ABSTRACT

A total of 128 middle- and upper-working class children in four age groups, ranging in 2-year intervals from 4 to 10 years of age and equally divided by sex, viewed 28 photographs of adults and children expressing seven emotions in order to explore developmental changes in children's ability to differentiate emotions. Emotions modeled were happiness, sadness, fear, anger, disgust, surprise, and shame. Four tasks were posed; results of matching, labelling and comprehension tasks are reported. Whereas children in this sample showed a much greater deceleration of the curve of success than did Izard's (1971) sample, results from these London children are in some ways very similar to those obtained in his study of American and French children. The steep rise in successful recognition and labelling he obtained in those children between 2 and 5 years is also shown in the steep rise found between the 4- and 6-year-olds of this sample. These subjects also displayed the marked difference between labelling and comprehension which may be indicative of their relative unfamiliarity with emotional terms and emotion as a field of discourse. Subjects frequently confused shame and sadness, fear and surprise, and anger and disgust. Happy, sad, frightened, and surprised expressions were those most easily discriminated, with happiness by far the best distinguished. (RH)

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CHILDREN'S ABILITY TO RECOGNISE EMOTION FROM PHOTOGRAPHS

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Introduction

The work reported here is part of a project planned to elucidate further some findings of a previous investigation into The Young Child's Representation of Persons and the Social World (ESRC grant HR C00/23/0027) undertaken by Shields and Duveen in 1982/3. The brief section on Emotion in this project appeared to show that a substantial minority of three and four year old children who were asked to label angry and sad expressions in a drawn representation confused the two emotions though children asked to select a cross or sad face did so accurately to a label supplied. Both groups of children when questioned about what would make them , their mothers or their teachers cross or sad provided similar answers for both emotions, distinctions emerging only at age five. This suggested that children of the ages tested(3½,4½,5½.) were emerging from a two phase scheme of emotional representation where happiness was distinguished from upset states,but upset states were less clearly differentiated. It appeared that a developmental gradient in the emergence of differentiation would be worth exploring over a more extended list of emotions and a more extended age range.

A project * was therefore planned around two main groups of tasks, the first replicating work based on the recognition

* This work is supported by ESRC Grant C00/23/2109.

of faces in photographs, which is reported here, and the second on the understanding of story episodes which might arouse emotion together with a conversational discussion on the child's personal and observed experience of such emotions, which is in preparation.

Emotion and Facial Expression

The literature on emotion is vaste and confusing. It is dogged by lack of agreement as to what is encompassed by the term 'emotion' and it is beset by many different theories and a welter of discursive metaphors. Emotion is not a field that lends itself easily to laboratory investigation except in very limited ways. Non-clinical studies of emotion have been steered by this difficulty towards the use of subject judgement on contrived stimulus material, either facial displays, situational representations or combinations of these. Those theoreticians who hold views of emotion which link it closely to specific,heritable endogenous mechanisms are propelled by their theoretical stance towards research in the CNS, hormonal and visceral changes and changes in the skeleto-muscular systems, in particular facial expressions as these afford material for fairly clear cut experimental design and to some extent bridge the gap between common sense understanding of emotion and less accesible bodily changes. This approach has been fruitful in some ways, but its natural concentration on within organism factors has resulted in neglect of those emotions wich arise from between-person relationships e.g. love, sympathy and compassion or even hatred, jealousy and vengefulness. These are emotions which imply complex social networks, can endure over time, and have no necessary connection with particular facial displays.

The multitude of delicately nuanced emotional discriminators embodied in a socially evolved language have no place in this line of study except as purported 'cocktail mixes' of a small set of 'basic' ingredients, i.e. those emotions which produce specifiable facial change.

It is possible, however that facial expressions are part of the alphabet of social signals which, suitably modified by cultural and subcultural norms, inform human beings about the feelings of others. A reasonably socially competent member of a social group should have, and probably does have an understanding of a far wider and more subtle system than that provided by the so called 'basic' set.

Nevertheless. the development of more complex social represent--ations is likely to be related to the ability to encode and decode more elementary social signals, and it is, therefore, likely to be worthwhile to include the identification of the facial expresssion of the so called 'basic' emotions in an investigation of the development of representation by children of these along with more socially derived emotions.

(see Ekman et al 1982, Izard 1971,1877, 1978, and Plutchik and Kellerman 1983 for reviews of theory and research)

Methodology

(a) Materials.

A set of 28 photographs posed by four models of seven emotions, viz: happiness, sadness, fear, anger, disgust, surprise, and shame were selected from 288 taken by machine driven camera. The models were two adults and two nine year old children of either sex. The models were not actors or Ekman-trained face pullers, and were responding to verbal requests or prompts. The 'best' exponents of each expression were agreed by the two investigators and then shown to a group of 18 adults asked to label the expressions from a list of thirteen terms. Expressions of contempt, pride boredom, interest, jealousy and neutrality were discarded at this stage either because agreed identification was low or because sets were incomplete. Additional photographs were taken of each model and the final set of 28 photographs were rated by thirty adults selecting terms from a list of seven. Interview techniques were piloted with a group of 4-year-old children

(b) Subjects

The subjects were 128 London children drawn from four schools, and whose parents' occupations fell within the Registrar General's classes III & IV, i.e. upper and middle working class. There were 32 children in each of four age groups, 4,6,8,and 10 equally divided between boys and girls. All children were from English -speaking homes. A further group of 12 year olds will be interviewed later.

(c) Procedure

The children were interviewed individually. They were asked for help in finding out what children of their age knew about feelings and emotions. Each child was initially presented with a set of seven photographs posed by a same sex or opposite sex child, or a same sex or opposite sex adult. The model was named. All seven photographs were

presented simultanously. There were four tasks.

(1) Matching: The child was presented one by one with a second set of identical photographs and asked to match them to the original set. This was a warm-up task and the great majority of the children were 100% successful.

(2) Production task (Labelling). The child was asked to label each photograph pointed to in random order in response to the question: 'what do you think Laura, Hilary, Gerard or Darren is feeling when he/she looks like that?' or a close paraphrase

(3) Cross matching: The child was asked either to match the set already tabled with another set of different sex or age, or to cross-match two different sets across age or sex.

(4) Comprehension task: The seven photographs first presented were isolated and the child asked to point to the appropriate photograph in reply to the question 'Which photograph shows Gerard....etc. feeling happy, cross, disgusted...etc?

Scoring

Each response was was noted as (a) correct (b) identification of another emotion (c) inapropriate or(d) other. Most difficulty came in task (2) where decisions had to be made on the basis of a paraphrase or situational definition. Following Izard(1971) these were accepted where appropriate,e.g. 'a bit down' and 'something dead' were accepted for the sad expression, but'thinking' was not. The most numerous paraphrases were offered in the labelling of shame. Some of the near misses captured some of the emotional quality such as 'worried' 'wondering' 'trying to answer a difficult question', but 'sneaky' and 'bored' were classified as inappropriate.

RESULTS ARE GIVEN FOR TASKS (1), (2) AND (4)

Figure 1. Percentage of correct responses by task and age.

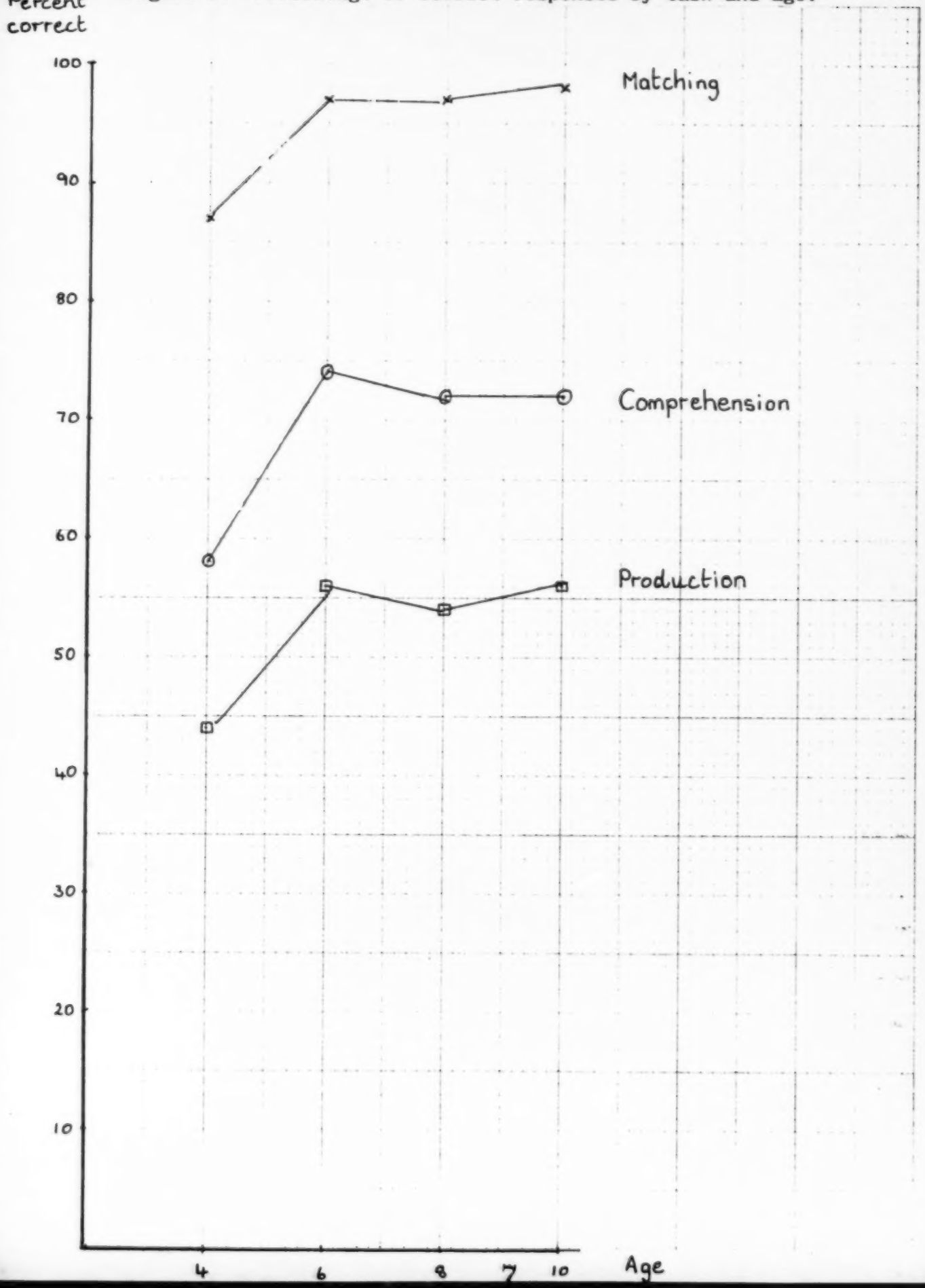


Figure 2. Percentage of correct responses of 4-year olds, 6-year olds and adults in the comprehension task to each expression.

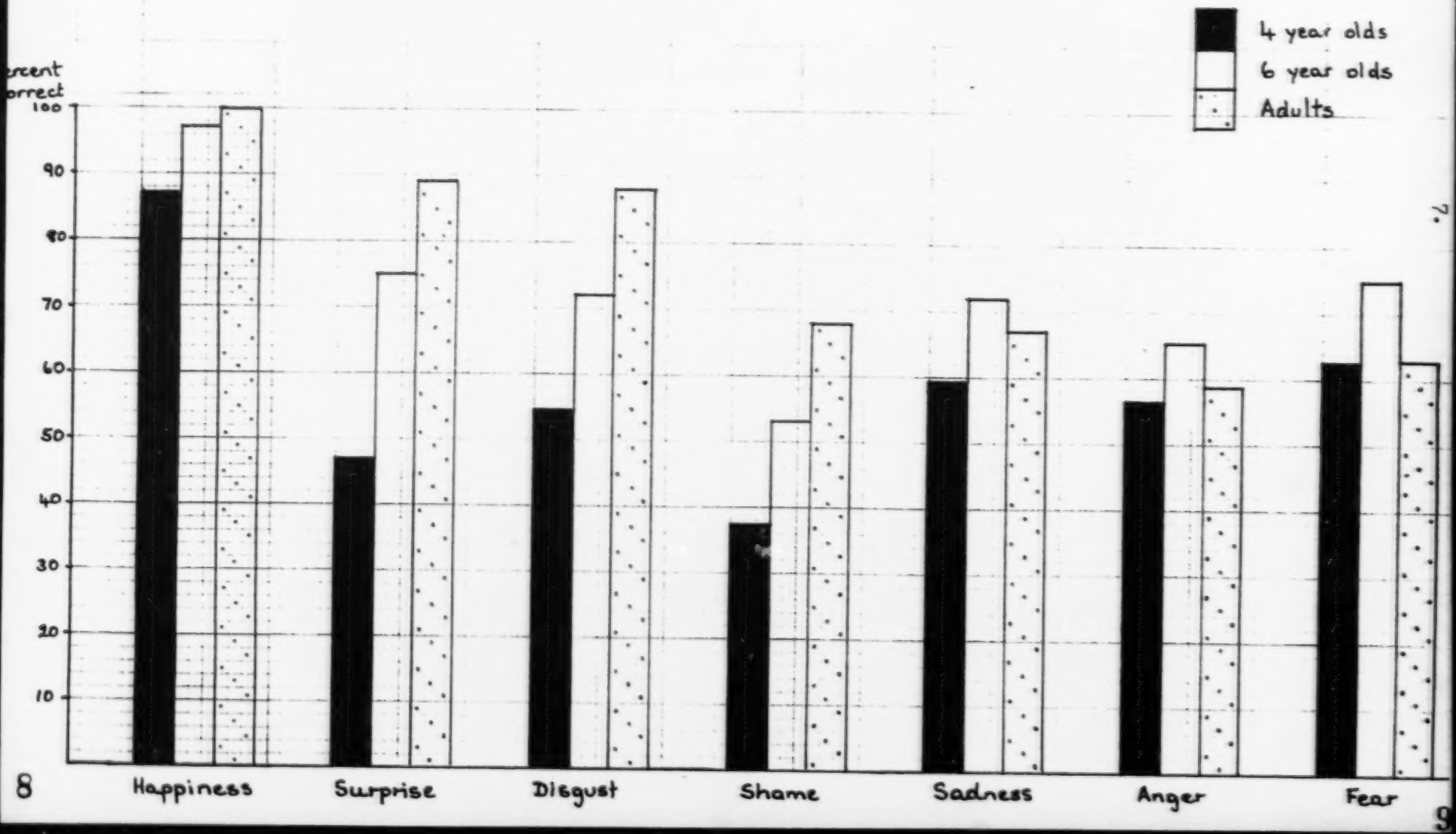
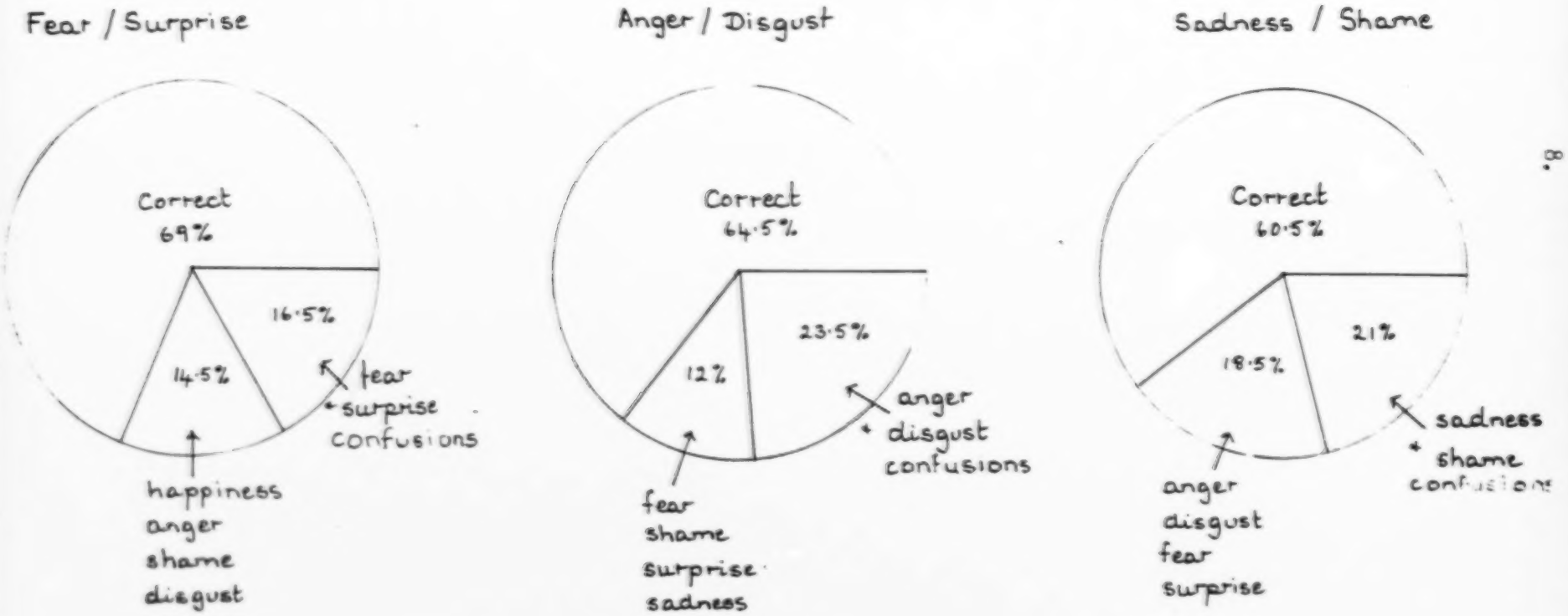


Figure 3.

This shows the percentage of correct selections for each of the pairs of common confusions: sadness/shame, fear/surprise anger/disgust. together with the percentage of occasions on which the other member of the pair was chosen, and also the percentage of occasions on which one of the other emotions was chosen.



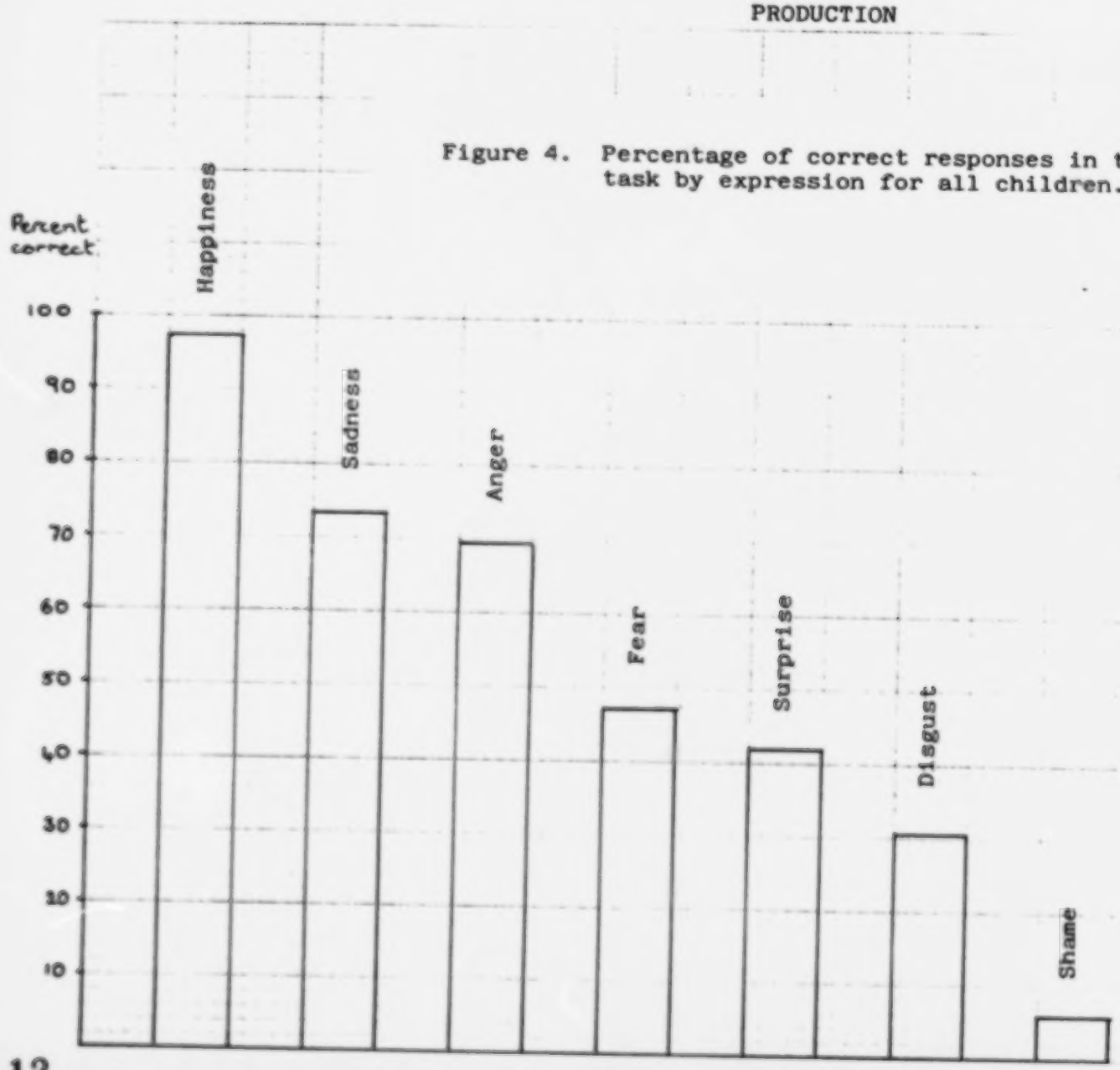


Figure 4. Percentage of correct responses in the production task by expression for all children.

Discussion

The results obtained from these London children are in some ways very similar to those obtained by Izard in his study of American and French children (Izard 1971) The steep rise in successful recognition and labelling he obtained between 2 &5 is also shown in the steep rise between our four and six year olds. This may be due to task difficulty for the younger children. We also obtained the marked difference between labelling and comprehension which may be indicative of the childrens relative unfamiliarity with emotional terms and emotion as a field of discourse. Such differences are commonly noted in cognitive research

On the other hand, the children in this sample showed a much greater deceleration of the curve of success than did Izard's sample.. This may, of course be the result of different methodology. It may also be the result of difference in the stimulus material which may have lacked sufficient differentiation. On the other hand the natural environment of children from which they have to learn their skill in emotional identification is unlikely to include Ekman trained face-pullers or professional actors, and the naive models we used may be more representative of the expressive abilities of those from which the child has to acquire her representations. A more likely answer may be that the so called basic emotions are relatively infrequently displayed in the children's environ--ment except in dramatic representations in the media. Socialised emotions are more varied, more complex, more muted in display, and more likely to be expressed at a verbal level than in the face. The growth in more mature abilities in representing emotion may de-emphasise the face in favour of other clues.

Support for this interpretation may be drawn from the differences between the labelling and comprehension tasks (See figure 1). It appears from this that a verbal label is of more help in disambiguating a facial expression than an expression is in calling up a d scription. If facial expression appears to lose saliency in relation to other powerful indices such as situation and language, there is no reason to give it increasing cognitive attention.

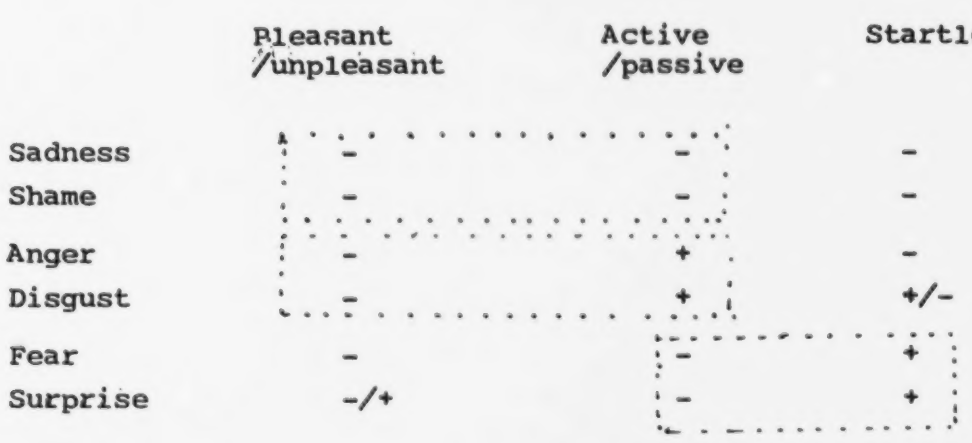
Common Confusions in the identification of facial expression

One of the most interesting results is the presence of standard confusions between emotions. Mistakes in identification were not on the whole random. The most frequent confusions were between shame and sadness, fear and surprise, and anger and disgust (see figure 3). These identical confusions were also found by Tomkins and McCarter (1964) in their study of 24 naive urban firemen. They laid some of the blame on model deficiencies where a predominant mood shone through.

> 'A predominantly friendly model does not have a completely pure sneer of contempt'

Ekman and his colleagues who are committed to the specificity of basic emotions suggest that such confusions are due to blends of two separate emotions, and that the confusions disappear when raters are allowed to name both components. Children in a normal environment will have to sharpen their skills on mild non-sneerers and placid non snarlers and committed maintainers of a stiff upper lip, as well as many idiosyncratic forms of expression. It may be that a more economical deployment of their cognitive ability would direct them to more general characteristics of human expression in conjunction with other clues.

For example a dimensional approach, or one based on distinctive features might provide sufficient information to be used in conjunction with other clues, given the redundancy in most situations in which a child or adult is called upon to judge emotional states. Excluding happiness as expressed in smiling which was rarely confused with any other state, the use of three dimensions pleasant/unpleasant, active/passive, and startle, all available to young children might illustrate how these confusions arise due to the sharing of common dimensions:



There are, of course objections to a dimensional approach, one being that apart from pleasant/unpleasant, none of the theorists who use dimensions agree on which to use. Even using facial categories, however, sadness and shame would share a drooped head and downcast eyes, anger and disgust would share a frown and lip tension, and fear and surprise share dramatically widened eyes and an opened mouth. These physical descriptions are not nearly as detailed as those supplied by Ekman and Izard, but could indicate the more general character of the clues on which the children rely for extracting information from faces.

Differences in discriminability between facial expressions

Happy,sad frightened and surprised expressions were those most easily discriminated, with happiness by far the best distinguished. Disgust and shame were least well discriminated It may be that expressions of disgust are discouraged by social norms, and the expression of contempt which, in the literature appears allied with it,may be considered out of place in a society more closely geared to non-discrimination between persons. Shame is closely linked with the grasp of complex social/behavioural rules and their violation and may therefore be more dependent on verbal reproaches, excuses and justifications and less closely linked to endogenous expressive modes. It is expressively linked to sadness by the drop in muscle tone and downcasting of the eyes. Shame proved to be the emotion most difficult for the children to elucidate in the subsequent interview and may develop late.

Conclusion

The children in this sample were competent raters of four of the 'basic ' emotional expressions, in fact nearly as good as the adults who piloted the sample. Disgust taxed their linguistic capacity, and so did shame, and they were less able to handle them discursively. It appears unlikely that advances in the complexity of emotional representation are closely linked to fine discriminations of facial expression, and developmental growth should be sought in a grasp of social relations and the refinement of the more nuanced distinctions in discourse.

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